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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,431	01/26/2004	Mats Oberg	MP0148 . I	1982
26703	7590	07/26/2005	EXAMINER	
HARNESSE, DICKEY & PIERCE P.L.C.			YOUNG, BRIAN K	
5445 CORPORATE DRIVE				
SUITE 400				
TROY, MI 48098			ART UNIT	PAPER NUMBER
			2819	

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/765,431

**Applicant(s)**

OBERG ET AL.

**Examiner**

Brian Young

**Art Unit**

2819

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-106 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-35 and 71-106 is/are allowed.
- 6) ☒ Claim(s) 1,3,5,36,54,56 and 58 is/are rejected.
- 7) ☒ Claim(s) 2,4,6-17,37-53,55,57 and 59-70 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4/28/05 & 1/26/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Art Unit: 2819

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,3,5,36,54,56, and 58 are rejected under 35 U.S.C. 102(b) as being anticipated by Soljanin.

Soljanin discloses (fig.2) an encoder (130) to encode a communication signal, comprising: a Dc-check circuit to compute a metric as a function of the data (210); a DC tracking block (230) to generate a flip signal (control codeword) as a function of the metric, the flip signal having a flip state and a nonflip state; and a flip unit (Inverter 220), responsive to the flip signal, to control a flip bit of an output of the signal buffer such that an average DC value of the data approaches zero (BSD=0).

The modulation encoder (130) acts as a buffer between the R-S Coder (120) and the Channel/ medium (140) (see figure 1).

Soljanin recites (col6, Ins.43-68) "FIG. 2 illustrates a first embodiment of the inventive method for generating **dc-free sequences**. In these embodiment q groups of information words of m symbols and a group of p symbols are input to modulation coder 130. Each group of m input symbols is used to select an n symbol codeword from codebook 210. Codebook 210 advantageously comprises  $2^{\text{sup.m}}$  codewords where the BDS of the symbols in the sequence defined by each codeword is x. Codebook 210 is advantageously implemented in a memory device such as read only memory or random access memory. The codewords selected by the set of input symbols

Art Unit: 2819

$\{m_{sub.1}, m_{sub.2}, \dots m_{sub.q}\}$  are  $\{n_{sub.1}, n_{sub.2}, \dots n_{sub.q}\}$  respectively. The group of  $p$  input symbols are input to control codebook 230 which contains  $2^{sup.p}$  codewords defining sequences of bipolar symbols of length  $q$  where each sequence has a BDS of zero. The group of  $p$  symbols selects a codeword, termed a control codeword, from control codebook 230 which is then input, along with the set of codewords  $\{n_{sub.1}, n_{sub.2}, \dots n_{sub.q}\}$  to inverter 220. Each of the  $q$  codewords is associated with one of the  $q$  symbols in the control codeword. Inverter 220 inverts the symbols in half of the codewords according to associated symbol in the control word. Thus after inversion, half of the codewords define a sequence with a BDS of  $x$ , and half a BDS of  $-x$ , and the output codeword (i.e. the group of codewords  $\{n_{sub.1}, n_{sub.2}, \dots n_{sub.q}\}$  as processed by inverter 220) defines a sequence with a BDS of zero."

3. Claims 18-35 and 71-106 are allowed.

4. Claims 2,4,6-17,37-53,55,57 and 59-70 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nose, et al 5,508,701 disclose codewords with  $CDS=0$  mapped in corresponding relationship to datawords, and codewords with  $CDS>0$  and codewords with  $CDS<0$  are paired together and mapped in corresponding relationship to the remaining datawords, and further, codewords with  $CDS \neq 0$ , left unmapped, are mapped in corresponding relationship to the datawords to which the codewords with  $CDS=0$  have been mapped, thus reducing the probability of occurrence of codewords

Art Unit: 2819

with large DSV in absolute value terms and thereby achieving a further suppression of low-frequency components. Based on the least significant bit of the codeword corresponding to the last dataword and on the current and next datawords, a codeword corresponding to the current dataword is selected, thus realizing high-density recording with good overwrite characteristics.

Kahlman, et al 5,477,222 disclose a device for encoding a stream of databits of a binary source signal (S) into a stream of databits of a binary channel signal (C), wherein the bitstream of the source signal is divided into n-bit source words ( $x_{sub.1}$ ,  $x_{sub.2}$ ), which device includes a converting circuit (CM) adapted to convert the source words into corresponding m-bit channel words ( $y_{sub.1}$ ,  $y_{sub.2}$ ,  $y_{sub.3}$ ). The converting circuit (CM) is further adapted to convert n-bit source words into corresponding m-bit words, such that the conversion for each n-bit source word is parity preserving (table I). The relations hold that  $m > n \geq 1$ ,  $p \geq 1$ , and that p can vary. Preferably,  $m = n + 1$ .

Chaki, et al 5,469,162 disclose a data modulation method, m-bit data is modulated to n-bit data ( $n \geq m$ ) having fewer direct current and low frequency components. A dispersion of the digital sum variation of code weights can be reduced, a direct current component is reduced and an error rate can be further reduced by selecting a plurality of modulation tables constituting the combination of one or more sub-groups of modulation data obtained by dividing a group of modulation data by a code weight having the same value based on the digital sum variation of the code weights accumulated until a time at which m-bit data is converted to n-bit code and converting

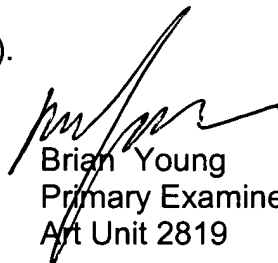
Art Unit: 2819

next m-bit data continuously to present m-bit data to n-bit code by using the modulation tables.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Young whose telephone number is 571-272-1816. The examiner can normally be reached on Mon-Fri 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Tokar can be reached on 571-272-1812. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Brian Young  
Primary Examiner  
Art Unit 2819

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